



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,284	10/15/2003	Edward Hin Pong Lee	HIT1P021/HSJ9-2003-0069US	7539
50535	7590	08/10/2005	EXAMINER CAO, ALLEN T	
ZILKA-KOTAB, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			ART UNIT 2652	PAPER NUMBER

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/687,284

**Applicant(s)**

LEE ET AL.

**Examiner**

Allen T. Cao

**Art Unit**

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/15/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The disclosure is objected to because of the following informalities: The paragraphs "Fig. 1 ...." and "Fig. 2 ...." In the "Brief Description Of The Drawings", page 6 should include the term "Prior Art" or "conventional".

Appropriate correction is required.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "trapezoidal shape" in claim 5 and "tapers together" in claim 6 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-2, 7 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawasaki et al (US. 6,765,757 B2).

Kawasaki et al discloses a magnetic head having an air bearing surface including a first pole tip 19 having an upper end; a second pole tip 21 having a bottom end spaced apart from and facing the upper end of the first pole tip; and a bump 17 extending into a portion of the upper end of the first pole tip and a portion of the bottom end of the second pole tip, the bump being positioned away from the ABS, all as set forth in claims 1 and 25.

Regarding claim 2, Kawasaki et al discloses that the bump defines a throat height (Gd) of the first and second pole tips.

Regarding claim 7, Kawasaki et al discloses that the bump extends in a direction away from the ABS about to a back gap of the magnetic head.

Regarding claim 25, Official Notice has been taken that the write element structure or the magnetic structure including a sensor as described above or in Kawasaki et al is used for a magnetic storage system which includes a magnetic media (disk or disc), a head, a slider for supporting the head, and a control unit coupled to the head for controlling operation of the head.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-4, 6 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al.

Kawasaki et al only discloses that the bump is a half-circle/oval shape. Kawasaki et al does not disclose that the bump is a circular shape (claim 3), or a oval shape (claim 4), or "tapers together" (claim 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the half-circle/oval shape of the bump of Kawasaki et al to either a circular shape (claim 3), or a oval shape (claim 4), or "tapers together" (claim 6) through a routine changing in well known shape which obvious to one of ordinary skill in the art in order to improve the throat height characteristics, thus improve read/write characteristics.

Regarding claims 13 and 14, Kawasaki et al does not disclose that the bump is either formed by a dry process (claim 13) or deposition (claim 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the bump of Kawasaki et al by a dry process or deposition as a result of routine engineering optimizing. Applicant has shown no criticality for such as any unexpected results deriving from such. Additionally, it is not found to be persuasive as a process limitation should only be accorded weight to the extent that it affects the structure of the completed magnetic head since claims are directed to a "magnetic head", per se. Furthermore, it should be noted that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process, and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior art product was made by a different process", In re Thorpe, et al., 227 USPQ 964

(CAFC 1985). It should also be noted that a "[p]roduct-by process claim, although reciting subject matter of claim in terms of how it is made, is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", In re Hirao and Sato, 190 USPQ 685 (CCPA 1976).

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al in view of Sato (US. 6,683,750 B2).

Kawasaki et al only discloses that the bump is a half-circle/oval shape. Kawasaki et al does not disclose that the bump is a trapezoidal shape.

Sato discloses a magnetic head having a bump 45 which is a trapezoidal shape.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the half-circle/oval shape of the bump of Kawasaki et al to a trapezoidal shape as taught by Sato through a routine changing in well known shape which obvious to one of ordinary skill in the art in order to improve the throat height characteristics, thus improve read/write characteristics.

10. Claims 8-12, 15-17 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al in view of the admitted prior art of Yazawa (US. 2004/0070876 A1).

Regarding claims 8 and 15, Kawasaki et al does not disclose that the bump is made of a nonmagnetic material.

Yazawa, admitted prior art (figure 11) discloses that the bump 11 is made of a nonmagnetic material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the bump with a nonmagnetic material as taught by Yazawa to improve the flux density characteristics of the head, thus improve read/write characteristics. Additionally, it has been held to be within the general skill of a worker in the art to select a known material having different chemical bonding structures on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416 (CCPA 1960).

Regarding claim 20, Kawasaki et al discloses that the bump extends in a direction away from the ABS about to a back gap of the magnetic head.

Regarding claims 9-11, Kawasaki et al as modified by Yazawa only discloses that the bump is made of a nonmagnetic material; however, Kawasaki et al as modified by Yazawa do not disclose that the bump is either made of alumina (claim 9), nonmagnetic metal (claim 10), or the nonmagnetic metal is electrically conductive (claim 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the nonmagnetic bump of Kawasaki et al as modified by Yazawa with such material as set forth, as claimed in claims 9-11 to improve the flux density characteristics of the head, thus improve read/write characteristics. Additionally, it has been held to be within the general skill of a worker in the art to select a known material having different chemical bonding structures on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416 (CCPA 1960).



Regarding claim 12, Kawasaki et al as modified by Yazawa does not disclose that the bump is formed by a cured resist process.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the bump of Kawasaki et al as modified by Yazawa by a cured resist process as a result of routine engineering optimizing. Applicant has shown no criticality for such as any unexpected results deriving from such. Additionally, it is not found to be persuasive as a process limitation should only be accorded weight to the extent that it affects the structure of the completed magnetic head since claims are directed to a "magnetic head", per se. Furthermore, it should be noted that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process, and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior art product was made by a different process", In re Thorpe, et al., 227 USPQ 964 (CAFC 1985). It should also be noted that a "[p]roduct-by process claim, although reciting subject matter of claim in terms of how it is made, is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", In re Hirao and Sato, 190 USPQ 685 (CCPA 1976).

Kawasaki et al only discloses that the bump is a half-circle/oval shape. Kawasaki et al as modified by Yazawa does not disclose that the bump is a circular shape (claim 16), or a oval shape (claim 17), or "tapers together" (claim 19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the half-circle/oval shape of the bump of Kawasaki et al to either a circular shape (claim 16), or a oval shape (claim 17), or "tapers together" (claim 19) through a routine changing in well known shape which obvious to one of ordinary skill in the art in order to improve the throat height characteristics, thus improve read/write characteristics.

Regarding claims 21-22, Kawasaki et al as modified by Yazawa only discloses that the bump is made of a nonmagnetic material; however, Kawasaki et al as modified by Yazawa do not disclose that the bump is either made of alumina (claim 21) or nonmagnetic metal (claim 22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the nonmagnetic bump of Kawasaki et al as modified by Yazawa with such material as set forth, as claimed in claims 21 and 22 to improve the flux density characteristics of the head, thus improve read/write characteristics. Additionally, it has been held to be within the general skill of a worker in the art to select a known material having different chemical bonding structures on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416 (CCPA 1960).

Regarding claims 23 and 24, Kawasaki et al as modified by Yazawa does not disclose that the bump is either formed by a dry process (claim 24) or cured resist (claim 23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the bump of Kawasaki et al as modified by Yazawa by a dry process or cured resist as a result of routine engineering optimizing. Applicant has shown no criticality for such as any unexpected results deriving from such.

Additionally, it is not found to be persuasive as a process limitation should only be accorded weight to the extent that it affects the structure of the completed magnetic head since claims are directed to a "magnetic head", per se. Furthermore, it should be noted that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process, and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior art product was made by a different process", In re Thorpe, et al., 227 USPQ 964 (CAFC 1985). It should also be noted that a "[p]roduct-by process claim, although reciting subject matter of claim in terms of how it is made, is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", In re Hirao and Sato, 190 USPQ 685 (CCPA 1976).

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al and Yazawa and further in view of Sato (US. 6,683,750 B2).

Kawasaki et al only discloses that the bump is a half-circle/oval shape. Kawasaki et al does not disclose that the bump is a trapezoidal shape.

Sato discloses a magnetic head having a bump 45 which is a trapezoidal shape.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the half-circle/oval shape of the bump of Kawasaki et al as modified by Yazawa to a trapezoidal shape as taught by Sato through a routine changing in well known shape which obvious to one of ordinary skill in the art in order to improve the throat height characteristics, thus improve read/write characteristics.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen T. Cao whose telephone number is (571) 272-7569. The examiner can normally be reached on Mon - Thurs (7:30 - 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen Cao  
Primary Examiner